

REMARKS

This responds to the Office Action mailed on October 19, 2006.

Claims 16, 23, 26 and 29 are amended, claim 17 is canceled, and no claims are added; as a result, claims 16 and 18-31 are now pending in this application.

§101 Rejection of the Claims

Claims 16-31 were rejected under 35 U.S.C. § 101 because the claims are directed to a non-statutory subject matter, specifically, the claims are not directed towards the final result that is useful, tangible and concrete.

Applicant respectfully submits that claims 16 and 18-31 are describing a practical application and a final result which is concrete, useful and tangible. Claims 16, 23, 26 and 29 have been amended to more clearly define Applicant's claimed invention as requested by the Examiner.

In the Office Action, the Examiner states that claims 16-31 lack claim limitation describing a practical application and a final result which is concrete, useful and tangible (p. 3, lines 6-12). As support of this, the Examiner asserts that Applicant did not claim using Applicant's claimed invention "to generate OLAP queries which allow users to access different OLAP database."

As claimed in independent claims 16, 23, 26 and 29, Applicant clearly claims an apparatus, a data model and a method for use in generating OLAP queries to support a plurality of different OLAP servers. It is inherent that users using Applicant's claimed invention will be able to access different OLAP servers as noted above.

For example, by using the apparatus, method, or data model taught by Applicant and claimed in claims 16 and 17-31, the users do not have to know all different sets of query formats coming along with different OLAP database servers to manipulate the one or more database. The users can interact with the different OLAP database servers having different query formats via a common set of instructions. Also, it is clear that Applicant's claimed invention creates OLAP query statements in one of the different query formats employed by the different OLAP database

servers. The OLAP query statements are a concrete, useful and tangible result by Applicant's invention claimed in claims 16 and 17-31. Reconsideration is respectfully requested.

§102 Rejection of the Claims

According to M.P.E.P. § 2131, a reference must teach every element of the claim to anticipate a claim. "A claim is anticipated only if **each and every element** as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."

Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). It is not enough, however, that the prior art reference discloses all the claimed elements in isolation. Instead, "[a]nticipation requires the presence in a single prior reference disclosure of each and every element of the claimed invention, **arranged as in the claim**."

Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added).

Claims 16-20, 22-23, 25-26, 28-29 and 31 were rejected under 35 U.S.C. § 102(e) for anticipation by Cazemier et al. (U.S. Patent No. 6,609,123: hereinafter "Cazemier").

Cazemier describes a query engine for generating a data source query to obtain data from one or more data sources. Cazemier also describes using data model objects contained in a metadata model to generate a data source query.

Applicant respectfully submits that Cazemier do not teach following elements as taught by Applicant and claimed in claims 16 and 17-31: (1) a data structure which models an OLAP query in an abstract form compatible with several different OLAP query formats; and (2) a programming interface generating an OLAP query statement in different OLAP structured query formats as specified by a query object model. Claims 16 and 23 have been amended to emphasize these differences. The Examiner, therefore, has failed to show each and every elements has failed to Cazemier teaches each and every element of Applicant's claimed invention as arranged in claims 16 and 23 as required by *Verdegaal Bros., Lindemann Maschinenfabrik GmbH* and the MPEP.

As noted, for example, at p. 3, line 14 through p. 4, line 8, Applicant's claimed invention simplifies generating OLAP queries in different formats. As noted by Applicant, it is difficult for an OLAP query and reporting application to support both Microsoft Analysis Services and Hyperion Essbase servers from one code base because there is no industry-standard methodology for use with OLAP database technology such as SQL or ODBC in a relational database. *Id.* By supporting multiple OLAP query formats, Applicant's claimed invention enables OLAP query and reporting applications to support both Microsoft Analysis Services and Hyperion Essbase database servers from one code base without having to know their different formats. In addition, because of its simplicity, Applicant's invention can be easily adapted to support new OLAP servers in the future.

In the Office Action, the Examiner states that Cazemier's metadata model includes a data structure which models an OLAP query (Office Action, p. 4, lines 5-7). As support of this, the Examiner points to Figs. 2 & 10 and col. 3, lines 43-60 of Cazemier, which states:

The present invention is directed to a query engine which formulates a data source query by interaction to model objects having business intelligence contained in a **metadata model representing underlying one or more data sources**.

According to one aspect of the present invention, there is provided a query engine for formulating a query to obtain data from one or more data sources using a client application receiving user inputs and a metadata model containing model objects that represent the data sources. The query engine comprises a query specification interface for allowing the client application to generate a query specification based on a user input, and receiving the generated query specification. The query engine also comprises a query engine component for translating the query specification into a data source query which is applicable to the data sources, based on **model objects in the metadata model having business intelligence**.

Based on the quoted portion, the Examiner asserts that "Cazemier clearly generates an OLAP query statement" and that "this is considered by the Examiner as modeling an OLAP query" (p. 2, lines 11-12).

Applicant respectfully disagrees with the Examiner's interpretation of Cazemier. First of all, the cited portion does not show that data structures at Fig. 2 & 10 in Cazemier models an OLAP query. Instead, as quoted above, the portion shows that Cazemier's metadata model represents (i.e., models) one or more underlying data sources. The cited portion further teaches that the model objects in the metadata model have business intelligence information. This is well

supported in other portions of Cazemier too, for example, col. 6, lines 41-44. As noted at col. 6, lines 31-32 of Cazemier and as generally known in the industry, metadata is data or description about data sources. As noted at Figs 9 and 10 of Cazemier, for example, data sources are generally a set of business intelligence information. It is not clear from a reading of Cazemier whether Cazemier's metadata model (15) models an OLAP query.

In contrast, Applicant explicitly teaches at p. 14, lines 25-27, that Applicant's query object model provides objects that handle each clause associated with an OLAP query (i.e., the *select*, *from*, *where* and *order by* clauses). As noted at p. 15, line 27 through p. 17, line 2, and claimed in claim 16, Applicant further teaches and claims the query object model that models an OLAP query in more detail.

In addition, in the Office Action, the Examiner states that Cazemier discloses modeling an OLAP query in an abstract form compatible with multiple OLAP structured query formats (p. 4, lines 13-17). As support of this, the Examiner points to col. 6, lines 41-44, which states:

(col. 6, lines 41-44) The metadata model 15 stores metadata about its underlying one or more data sources 100. It is used to provide a common set of business-oriented abstractions of the underlying data sources 100.

The cited portion merely shows that Cazemier stores metadata about one or more data sources 100. As discussed above, first of all, it is not clear whether the metadata keeps any OLAP structured query formats. Even assuming so, Cazemier does not support multiple OLAP structured query formats. Applicant is unable to find a teaching that all or some of the one or more data sources (100) in Cazemier employ different OLAP structured query formats.

In contrast, as noted at page 5, line 29 through page 6, line 1, Applicant explicitly teaches and claims in amended claims 16 and 23, a query object which models an OLAP query in an abstract form compatible with multiple OLAP structured query formats. As noted at page 3, line 27 through page 4, line 8 and as noted in the discussion of patentability, providing compatibility with multiple OLAP query formats is important for Applicant's claimed invention to support two or more different OLAP database servers that use different structured query formats. Applicant is unable to find such a teaching in Cazemier.

Furthermore, in the Office Action, the Examiner states that Cazemier discloses "generating an OLAP query statement from the query object model according to a structured

query format specified by the query object model.” As support of this, the Examiner points to col. 3, lines 50-60 as quoted above.

Applicant respectfully submits that Cazemier does not teach generating an OLAP query statement from the query object model in one of the plurality of different OLAP structured query formats as described and claimed by Applicant.

In the Office Action, first of all, the Examiner asserts that Cazemier’s query specification interface is equivalent to ‘a programming interface for generating an OLAP query statement. As quoted above, however, the cited portion merely shows that the query specification interface of the query engine in Cazemier is used to generate the query specification and to receive the generated query specification. As noted at col. 7, lines 25-42 (with emphasis on lines 36), the query specification is an intermediate specification for an user’s request for data sources (i.e., “intermediate formulation of the query”) and may not be in a form that can be directly applied to data sources. Instead, for execution on the data sources, the query specification needs to be subsequently translated into a data source query language such as SQL. *Id.* This is well supported in other portions of Cazemier too, for example, Fig. 44 and col. 45, line 66 through col. 46, line 10.

Unlike the examiner’s assumption, under Cazemier’s approach, the data source query generated by a query engine component is a query statement applicable to the one or more data sources. Although Cazemier shows using “other equivalent language supported by data source providers (e.g., PowerPlay cubes, which are accessible through MDX)” for the data source query (e.g., col. 67, lines 11-14 and col. 68, claims 9 & 10), it is not clear from a reading of Cazemier whether Cazemier generates an OLAP query as taught by Applicant and claimed in claims 16 and 18-31. For example, Cazemier does not disclose how to transform the query specification into an OLAP language.

Even assuming that the cited portion of Cazemier indicates generating the data source query in MDX, Cazemier then teaches, at most, generating a data source query in either SQL or MDX. Cazemier does not, however, teach specifying a query format from several compatible different OLAP structured query formats using a query object model or generating an OLAP query statement in the format specified by the query object as taught by Applicant and claimed in amended claims 16 and 23.

In contrast, as noted at page 17, lines 5-15 & 29, Applicant explicitly teaches and claims in claims 16 and 23, that one OLAP query format is selected from a plurality of different OLAP structured query forms based on the specification in the query object mode to generate an OLAP query statement. For example, Applicant teaches that if a value of *Provider* property of query object (502) is 1, an RS query statement is generated. *Id.* An MDX query statement for the value 2 and other OLAP query statements for other values (e.g., 3). *Id.* The feature of alternative selection from multiple OLAP query formats is important in Applicant's claimed invention. As noted at p. 14, lines 22-25, this allows users of Applicant's claimed invention to manipulate a plurality of different OLAP database servers without having to know the different query formats for the multiple OLAP database servers as discussed above. In addition, Applicant further teaches and claims using a query object model to generate an OLAP query statement. As discussed above, Cazemier does not disclose the query object that models an OLAP query. Cazemier, therefore, does not teach generating an OLAP query statement using the query object model in one of the plurality of different OLAP structured query formats as described and claimed by Applicant.

For the reasons discussed above, Cazemier does not teach an OLAP query engine, object model and method for generating OLAP structured query statements as taught by Applicant and claimed in amended claims 16 and 23. Reconsideration is respectfully requested.

With regard to claims 18-20, 22, 25, 26, 28-29 and 31 are patentable as dependent on a patentable base claim.

§103 Rejection of the Claims

According to *M.P.E.P.* § 2141, which cites *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986), the following tenets of patent law must be adhered to when applying 35 U.S.C. § 103. First, the claimed invention must be considered as a whole. Second, the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination. Third, the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention. Fourth, obviousness is determined using a reasonable expectation of success standard. Under §

103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. *M.P.E.P.* § 2141 (citing *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966)).

The Examiner has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

M.P.E.P. § 2142 (citing *In re Vaeck*, 947 F.2d, 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Appellants' disclosure. *M.P.E.P.* § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). The references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. *M.P.E.P.* § 2142 (citing *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985)). In considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw there from. *M.P.E.P.* § 2144.01 (citing *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968)). However, if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *M.P.E.P.* § 2143.01 (citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)).

In order to take into account the inferences which one skilled in the art would reasonably make, the examiner must ascertain what would have been obvious to one of ordinary skill in the art at the time the invention was made. *M.P.E.P.* § 2141.03 (citing *Environmental Designs, Ltd. v. Union Oil Co*, 713 F.2d 693, 218 USPQ 865 (Fed. Cir. 1983), cert. denied, 464 U.S. 1043 (1984)).

The examiner must step backward in time and into the shoes worn by the hypothetical “person of ordinary skill in the art” when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention “as a whole” would have been obvious at that time to that person. Knowledge of Appellants’ disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the “differences,” conduct the search and evaluate the “subject matter as a whole” of the invention. The tendency to resort to “hindsight” based upon Appellants’ disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

M.P.E.P. § 2141.03.

Claims 21, 24, 27 and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Cazemier et al. (U.S. Patent No. 6,609,123) in view of Malloy et al. (U.S. Patent No. 6,122,636).

Cazemier is discussed above.

Malloy describes a method, apparatus, and article of manufacture for using a relational database management system to support on-line analytical processing (OLAP) systems. Specifically, Malloy describes performing database operations for an OLAP system in a relational database (col. 3, lines 42-51). In other words, Malloy emulates a multidimensional database using a relational database (col. 2, lines, 61-62).

Claims 21, 24, 27 and 30 are patentable as being dependent on a patentable base claim. In addition, neither Cazemier nor Malloy, alone or in combination, teach or suggest using a query object model capable of specifying both the MDX and the RS query formats or generating an MDX query statement and an RS query statement as specified by the query object model as taught by Applicant and claimed in claims 21, 24, 27 and 30. The Examiner, therefore, has failed to show establish a prima facie case of obviousness as required by *In re Fine* and the MPEP.

In the Office Action, the Examiner states that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have modified Cazemier to include RS query formats by the teaching of Malloy (p. 6-7, #9). As support of this, the Examiner points to col. 3, lines 30-39 & 45-50 of Malloy, part of which states:

(lines 45-50) ... The present invention replaces the integrated multi-dimensional data storage manager of Arbor Software's Essbase OLAP software with a relational database storage manager based on IBM's DB2 RDBMS software. The relational database storage manager enables the OLAP system to store data directly into a relational database.

Although the cited portion shows that Malloy implements its OLAP query system using a relational database storage manager, the portion does not teach or suggest that Malloy's object model, if any, is capable of specifying the MDX **and** the RS query formats. Nor does the portion teach or suggest that Malloy generates MDX **and** RS query formats selectively based on the specification in a query object model. Malloy does, at most, generate query statements in the RS format using the relational database storage manager.

In contrast, as noted at page 15, lines 8-20 and claimed in claims 21, 24, 27 and 30, Applicant explicitly teaches and claims the query object model capable of specifying the MDX and the RS query formats and the programming interface generating an MDX and an RS query statement according to the specification of the query object model. Applicant is unable to find such teachings in Malloy.

In addition, as noted above, the purpose of Malloy is to emulate a multidimensional database using a relational database (col. 2, lines, 61-62). As noted in the discussion of claim 16, Cazemier's query generation engine is to generate query statements (in either SQL or MDX format **but not both**) for multiple data sources built for different business intelligent tools having different conceptual and external database abstraction (col. 3, lines 32-37). Therefore, the combination of Cazemier and Malloy suggests, at most, generating query statements for one or more data sources exclusively in SQL, MDX or RS format. Unlike the Examiner's assertion, it would not necessarily be obvious to a person of ordinary skill in the art at the time of invention to combine Malloy into Cazemier to provide a query engine supporting two different OLAP query formats selectively based on a query object's specification.

For the reasons discussed above, neither Cazemier nor Malloy teach or suggest an OLAP query engine generating two different OLAP query formats selectively using a query object model capable of specifying the two different formats as taught by Applicant and claimed in claims 21, 24, 27 and 30. Reconsideration is respectfully requested.

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.116 – EXPEDITED PROCEDURE

Serial Number: 10/645,708

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Title: OLAP QUERY GENERATION ENGINE

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Dkt: 1285.004US2

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612) 373-6909 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

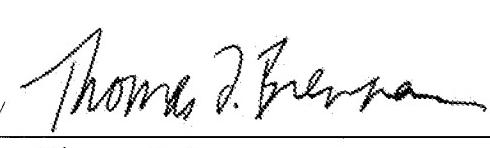
Reservation of Rights

In the interest of clarity and brevity, Applicant may not have addressed every assertion made in the Office Action. Applicant's silence regarding any such assertion does not constitute any admission or acquiescence. Applicant reserves all rights not exercised in connection with this response, such as the right to challenge or rebut any tacit or explicit characterization of any reference or of any of the present claims, the right to challenge or rebut any asserted factual or legal basis of any of the rejections, the right to swear behind any cited reference such as provided under 37 C.F.R. § 1.131 or otherwise, or the right to assert co-ownership of any cited reference. Applicant does not admit that any of the cited references or any other references of record are relevant to the present claims, or that they constitute prior art. To the extent that any rejection or assertion is based upon the Examiner's personal knowledge, rather than any objective evidence of record as manifested by a cited prior art reference, Applicant timely objects to such reliance on Official Notice, and reserves all rights to request that the Examiner provide a reference or affidavit in support of such assertion, as required by MPEP § 2144.03. Applicant reserves all rights to pursue any cancelled claims in a subsequent patent application claiming the benefit of priority of the present patent application, and to request rejoinder of any withdrawn claim, as required by MPEP § 821.04.

Respectfully submitted,
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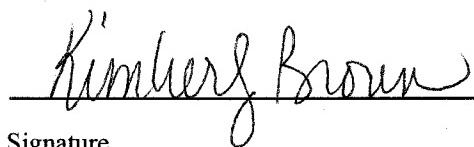
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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 19th day of January 2007.

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